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10/582,249	06/09/2006	Daisuke Kumaki	0756-7702	4819

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EXAMINER	
CAO, PHAT X	

ART UNIT	PAPER NUMBER
2814	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,249	KUMAKI ET AL.	
	Examiner	Art Unit	
	Phat X. Cao	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7,16,17,22-24,28,37 and 38* is/are allowed.

6)☒ Claim(s) *1-6,8-15,18-21,25-27 and 29-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/9/06; 9/29/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 26 is objected to because of the following informalities: "the second layer comprises DNTPD" should be changed to "the first layer comprises DNTPD" because as stated in page 8 of specification, DNTPD is a first layer but not second layer as claimed . Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-6, 8-15, 18-21, 25, and 29-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsumoto et al (US 2002/0098207).

Regarding claims 1-2 and 4-5, Matsumoto (Fig. 4) discloses a light element comprising: a first layer 16 of p-type semiconductor (hole transporting layer) comprising NPB and molybdenum oxide (pars. [0109] and [0010]); a second layer 104 of n-type semiconductor (electron transporting layer) comprising Alq and lithium (par. [0109]); and a third layer 13 comprising a light emitting substance (par. [108]), wherein the first layer 16, the second layer 104 and the third layer 13 are interposed between a first electrode

17 and a second electrode 11; wherein the second layer 104 is interposed between the first layer 16 and the third layer 13, wherein the first layer 16 is in contact with the first electrode 17, and wherein the light emitting element 13 emits light when a voltage is applied between the first electrode 17 and the second electrode 11 such that a potential of the second electrode (anode) is higher than that of the first electrode (cathode).

Regarding claims 3, 6, 8-15, and 25, Matsumoto (Fig. 4) further discloses that a molar ratio of the second substance (molybdenum oxide or vanadium pentoxide) to the first substance (NPB) is 1 (par. [0109]), and the light emitting element is incorporated into a display portion of an electronic appliance (par. [0003]).

Regarding claims 18-21 and 29-36, Matsumoto (Fig. 4) further discloses that the third layer 12/13 is in contact with the second electrode 11, the first layer 16 is in contact with the second layer 104, and the second layer 104 is in contact with the third layer 12/13.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-6, 8-15, 18-21, 25, and 29-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Liao et al (US 6,717,358).

Regarding claims 1-2 and 4, Liao (Figs. 1-2) discloses a light emitting device comprising: 130 (N-1) connecting unit comprising: a first layer 133 of p-type semiconductor (Fig. 2) comprising a first substance and a second substance (column 8,

lines 15-55) and a second layer 131 of n-type semiconductor (Fig. 2) comprising a third substance and a fourth substance (column 7, lines 45-67 through column 8, lines 1-15); and 120 (N-1) EL unit formed under 130 (N-1) connecting unit and comprising multilayer structures HIL/HTL/LEL/ETL (column 5, lines 61-67), multilayer structures HIL/HTL/LEL/ETL including a third layer comprising a light emitting layer substance LEL; wherein the first layer 133, the second layer 131 and the third layer LEL are interposed between a first electrode 140 and a second electrode 110; wherein the second layer 131 is interposed between the first layer 133 and the third layer LEL; wherein the first layer 133 is in contact with the first electrode 140; and wherein the light emitting element emits light when a voltage is applied between the first electrode 140 and the second electrode 110 such that a potential of the second electrode (anode) is higher than that of the first electrode (cathode).

Regarding claim 5, Liao (Figs. 1-2) discloses a light emitting device comprising: 130 (N-1) connecting unit comprising: a first layer 132/133 of p-type semiconductor (Fig. 2) comprising a first substance (133: NPB – column 8, lines 15-55) and a second substance (132: molybdenum oxide - column 8, lines 56-67 through column 9, lines 1-15) and a second layer 131 of n-type semiconductor (Fig. 2) comprising a third substance (ALq - column 7, lines 45-59) and a fourth substance (Li - column 7, lines 60-67 through column 8, lines 1-15); and 120 (N-1) EL unit formed under 130 (N-1) connecting unit and comprising multilayer structures HIL/HTL/LEL/ETL (column 5, lines 61-67), multilayer structures HIL/HTL/LEL/ETL including a third layer comprising a light emitting layer substance LEL; wherein the first layer 132/133, the second layer 131 and

the third layer LEL are interposed between a first electrode 140 and a second electrode 110; wherein the second layer 131 is interposed between the first layer 132/133 and the third layer LEL; wherein the first layer 132/133 is in contact with the first electrode 140; and wherein the light emitting element emits light when a voltage is applied between the first electrode 140 and the second electrode 110 such that a potential of the second electrode (anode) is higher than that of the first electrode (cathode).

Regarding claims 3, 6, 8-15, and 25, Liao (Figs. 1-2) further discloses that a molar ratio of the second substance to the first substance is 0.01 to 20 (column 7, lines 33-43), and the light emitting element is incorporated into a display portion of an electronic appliance (column 2, lines 1-15).

Regarding claims 18-21 and 29-36, Liao (Figs. 1-2) further discloses that the third layer is in contact with the second electrode 110, the first layer 132/133 is in contact with the second layer 131, and the second layer 131 is in contact with the third layer.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liao et al (US 6,717,358).

Liao discloses that the first substance (hole transporting layer) is NPB or TPD (column 8, lines 15-34) but does not disclose that the first substance is DNTPD.

However, it has been held that selecting a known material on the basis of its suitability for the intended use is a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. There was absent evidence of disclosure of criticality for selecting a first substance including DNTPD as claimed. Therefore, it would have been obvious to substitute DNTPD as claimed for the first substance of Liao because of their equivalence for their use in the semiconductor art as the hole transporting materials and the selection of any of these known equivalents to be used as a hole transporting material for the first substance of Liao would be within the level of ordinary skill in the art.

Allowable Subject Matter

8. Claims 7, 16-17, 22-24, 28, and 37-38 are allowed.

The prior art of record neither anticipates nor renders obvious all of the limitations recited in the base claim 7, including a thickness of the first layer and a thickness of the second layer satisfying expressions as claimed.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phat X. Cao whose telephone number is (571)272-1703. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571)272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. X. C./
Primary Examiner, Art Unit 2814

/Phat X. Cao/
Primary Examiner, Art Unit 2814